

Refer to $\odot P$ for Exercises 1–8. If \overline{SN} and \overline{MT} are diameters with $m\angle SPT = 51$ and $m\angle NPR = 29$, determine whether each arc is a minor arc, a major arc, or a semicircle. Then find the degree measure of each arc.

1. $m\widehat{NR}$ minor, 29°
2. $m\widehat{ST}$ minor, 51°
3. $m\widehat{TSR}$ major, 260°
4. $m\widehat{MST}$ semicircle, 180°

If $MT = 15$, find the length of each arc. Round to the nearest tenth.

5. \widehat{NR}

6. \widehat{ST}

7. \widehat{TSR}

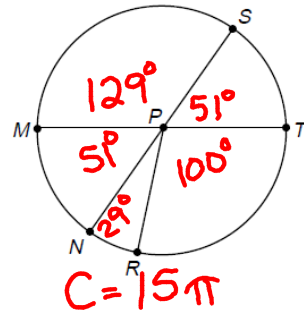
8. \widehat{MST}

$$5) \frac{29}{360} \cdot \frac{15\pi}{1} = \frac{29\pi}{24} \approx 3.79$$

$$6) \frac{51}{360} \cdot \frac{15\pi}{1} = \frac{17\pi}{8} \approx 6.67$$

$$7) \frac{260}{360} \cdot \frac{15\pi}{1} = \frac{65\pi}{6} \approx 34$$

$$8) \frac{180}{360} \cdot 15\pi = \frac{15\pi}{2} \approx 23.5$$



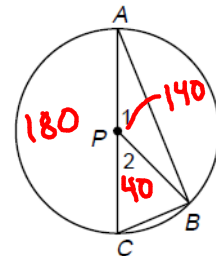
In $\odot P$, $m\angle 1 = 140$ with diameter \overline{AC} . Find each measure.

1. $m\angle 2$ 40

2. $m\widehat{BC}$ 40

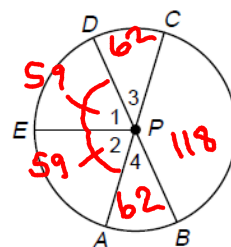
3. $m\widehat{AB}$ 140

4. $m\widehat{ABC}$ 180



In $\odot P$, $m\angle 2 = m\angle 1$, $m\angle 2 = 4x + 35$, $m\angle 1 = 9x + 5$ with diameters \overline{BD} and \overline{AC} . Find each of the following.

- | | | |
|--------------------------|------------------------|--------------------------|
| 5. x 6 | 6. $m\widehat{AE}$ 59 | 7. $m\widehat{ED}$ 59 |
| 8. $m\angle 3$ 62 | 9. $m\widehat{AB}$ 62 | 10. $m\widehat{EC}$ 121 |
| 11. $m\widehat{EB}$ 121 | 12. $m\angle CPB$ 118 | 13. $m\widehat{CB}$ 118 |
| 14. $m\widehat{CEB}$ 242 | 15. $m\widehat{DC}$ 62 | 16. $m\widehat{CEA}$ 180 |

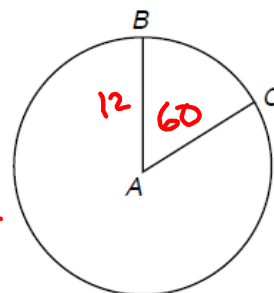


$$\begin{aligned}
 4x + 35 &= 9x + 5 \\
 -4x &\quad -4x \\
 35 &= 5x + 5 \\
 -5 &\quad -5 \\
 30 &= 5x \\
 6 &= x \\
 9(6) + 5 &= 59
 \end{aligned}$$

17. In $\odot A$, $AB = 12$ and $m\angle BAC = 60$.
Find the length of \widehat{BC} .

$$\frac{\cancel{60}^1}{\cancel{360}^3} \cdot \frac{\cancel{24}^4 \pi}{1} = \frac{4\pi}{1} = 4\pi$$

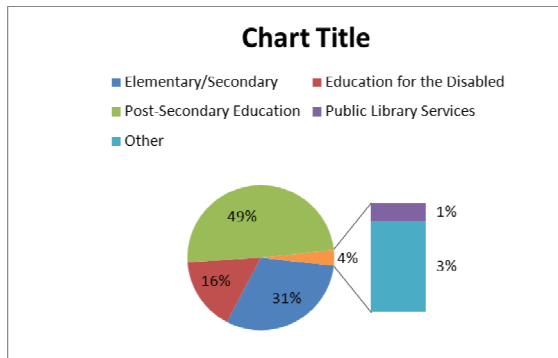
$$\approx 12.56$$



$$\begin{aligned}
 d &= 24 \\
 C &= 24\pi
 \end{aligned}$$

Using Graphs The table below shows how federal funds were spent on education in 1990.

1990 Federal Funds Spent for Education	
Elementary/Secondary	\$ 7,945,177
Education for the Disabled	4,204,099
Post-Secondary Education	12,645,630
Public Library Services	145,367
Other	760,616
Total	\$25,700,889



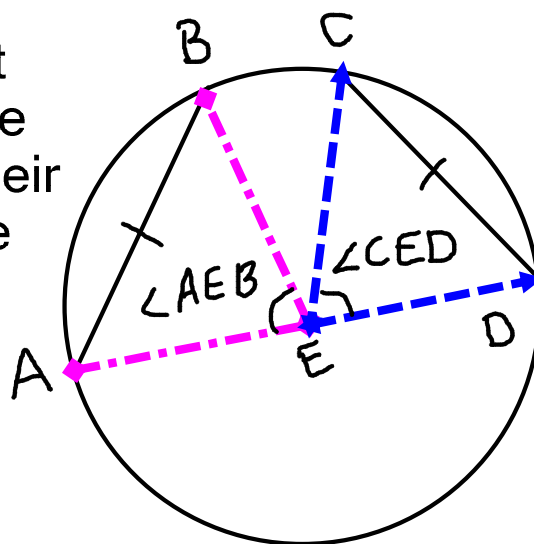
a. Use the information to make a circle graph.

b. Out of the \$12,645,630 spent on post-secondary education, \$10,801,185 went to post-secondary financial assistance. What percent is that of the \$12,645,630?

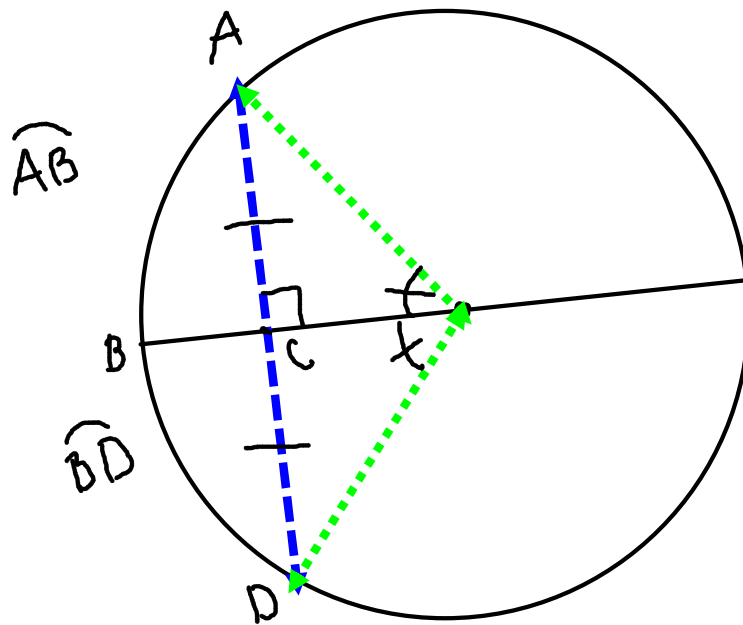
$$\frac{10,801,185}{12,645,630} \approx 85\%$$

Arc, Diameters, and Chords

In a circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.



In a circle, if a diameter is perpendicular to a chord, then it bisects the chord and its arc.



In a circle or in congruent circles, two chords are congruent if and only if they are equidistant from the center.

